

FORM PTO-1390		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		ATTORNEY'S DOCKET NUMBER: 49549-60259
INTERNATIONAL APPLICATION NO.: PCT/SE98/02386		INTERNATIONAL FILING DATE: 18 December 1998		U.S. APPL. NO. (if known, see 37 CFR 1.5) 09/581911
PRIORITY DATE CLAIMED: 19 December 1997				
TITLE OF INVENTION: ANIMAL RELATED APPARATUS				
APPLICANT(S) FOR DO/EO/US: Jan ERIKSSON				
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:				
1.	<input checked="" type="checkbox"/>	This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.		
2.	<input type="checkbox"/>	This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.		
3.	<input checked="" type="checkbox"/>	This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).		
4.	<input checked="" type="checkbox"/>	A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.		
5.	<input checked="" type="checkbox"/>	A copy of the International Application as filed (35 U.S.C. 371(c)(2))		
	a.	<input checked="" type="checkbox"/>	is transmitted herewith (required only if not transmitted by the International Bureau).	
	b.	<input type="checkbox"/>	has been transmitted by the International Bureau. (see attached copy of PCT/IB/308)	
	c.	<input type="checkbox"/>	is not required, as the application was filed in the United States Receiving Office (RO/US).	
6.	<input type="checkbox"/>	A translation of the International Application into English (35 U.S.C. 371(c)(2)).		
7.	<input type="checkbox"/>	Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).		
	a.	<input type="checkbox"/>	are transmitted herewith (required only if not transmitted by the International Bureau).	
	b.	<input type="checkbox"/>	have been transmitted by the International Bureau.	
	c.	<input type="checkbox"/>	have not been made; however, the time limit for making such amendments has NOT expired.	
	d.	<input type="checkbox"/>	have not been made and will not be made.	
8.	<input type="checkbox"/>	A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).		
9.	<input checked="" type="checkbox"/>	An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).		
10.	<input type="checkbox"/>	A translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).		
Item 11. to 16. below concern document(s) or information included:				
11.	<input checked="" type="checkbox"/>	An Information Disclosure Statement under 37 CFR 1.97 and 1.98.		
12.	<input checked="" type="checkbox"/>	An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.		
13.	<input checked="" type="checkbox"/>	A FIRST preliminary amendment.		
	<input type="checkbox"/>	A SECOND or SUBSEQUENT preliminary amendment.		
14.	<input type="checkbox"/>	A substitute specification.		
15.	<input type="checkbox"/>	A change of power of attorney and/or address letter.		
16.	<input checked="" type="checkbox"/>	Other items or information: International Preliminary Examination Report (PCT/IPEA/409) International Search Report (PCT/ISA/210) Patent Data Entry Format Sheet		

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) <div style="font-size: 2em; font-weight: bold; margin-left: 100px;">09/581911</div>		INTERNATIONAL APPLICATION NO. PCT/SE98/02386		ATTORNEY'S DOCKET NO. 49549-60259	
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17. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$ 970.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$ 840.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$ 690.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$ 670.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$ 96.00 <div style="text-align: right;">ENTER APPROPRIATE BASIC FEE AMOUNT =</div>				CALCULATIONS PTO USE ONLY	
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
<input type="checkbox"/>	CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$
<input type="checkbox"/>	Total claims	10 - 20 =	0	X \$18.00	\$
<input type="checkbox"/>	Independent claims	1 - 3 =	0	X \$78.00	\$
<input type="checkbox"/>	MULTIPLE DEPENDENT CLAIMS(S) (if applicable)			+ \$260.00	\$
TOTAL OF ABOVE CALCULATIONS =					\$ 970.00
Reduction of ½ for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).					\$
SUBTOTAL =					\$ 970.00
Processing fee of \$130 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.49(f)).					\$
TOTAL NATIONAL FEE =					\$ 970.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property					\$ 40.00
TOTAL FEES ENCLOSED =					\$ 1,010.00
					Amount to be refunded:
					charged:

a.	<input checked="" type="checkbox"/>	A check in the amount of \$ <u>1,010.00</u> to cover the above fees is enclosed.
b.	<input type="checkbox"/>	Please charge my Deposit Account No. 25-0120 in the amount of \$ to cover the above fees. A duplicate copy of this sheet is enclosed.
c.	<input checked="" type="checkbox"/>	The Commissioner is hereby authorized to charge any additional fees which may be required by 37 CFR 1.16 and 1.17, or credit any overpayment to Deposit Account No. 25-0120 . A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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June 19, 2000

 By *Benoît Castel*
 Benoît Castel
 Attorney for Applicant
 Registration No. 35,041

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Jan ERIKSSON

Serial No. (unknown)

Filed herewith

ANIMAL RELATED APPARATUS

PRELIMINARY AMENDMENT

Commissioner for Patents

Washington, D.C. 20231

Sir:

Prior to the first Official Action and calculation of the filing fee, please substitute Claims 1-11 as originally filed, which appear on pages 8 and 9, with Claims 1-10 as filed in the Article 34 amendment of 04 January 2000. The pages containing Claims 1-10 are marked "AMENDED SHEET" and are attached hereto. Following the insertion of Claims 1-10, please amend these claims as follows:

IN THE CLAIMS:

Claim 3, line 1, cancel "or 2".

Claim 4, line 1, change "anyone of claims 1 to 3," to --claim 1,--.

Claim 5, line 1, change "anyone of the preceding claims," to --claim 1,--.

Claim 7, line 1, cancel "or 6".

Claim 8, line 1, change "anyone of the preceding claims," to --claim 1,--.

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Jan ERIKSSON

Claim 9, line 1, change "anyone of the preceding claims," to --claim 1,--.

Claim 10, line 1, change "anyone of the preceding claims," to --claim 1,--.

R E M A R K S

The above changes in the claims merely place this national phase application in the same condition as it was during Chapter II of the international phase, with the multiple dependencies being removed. Following entry of this amendment by substitution of the pages, only claims 1-10 remain pending in this application.

Respectfully submitted,

YOUNG & THOMPSON

By



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June 19, 2000

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Claims

1. An animal related apparatus, comprising a robot (6) for performing an animal related operation, said robot being associated with a control means (23), and at least one animal related device (12a, 12b) associated with said control means, said robot being provided with a robot arm (8) adapted to move said animal related device towards an animal, **characterised in that**
- 5 a registering means (20a, 20b, ... , 20g) is provided for registering a cumulative running value;
- 10 said control means being adapted to generate a signal when a predetermined threshold value has been reached; and wherein
- said predetermined threshold value is set for each of said at least one animal related device, said robot and a complete animal related operation.
- 15 2. An apparatus according to claim 1, **characterised in that**
- said registering means (20a, 20b, ... , 20g) is adapted to register the running value of said at least one animal related device.
- 20 3. An apparatus according to claim 1 or 2, **characterised in that**
- said registering means (20a, 20b, ... , 20g) is adapted to register the running value of a driving means (22) of said robot (6).
4. An apparatus according to anyone of claims 1 to 3, **characterised in that**
- 25 said running value is the running time of said complete animal related operation.
5. An apparatus according to anyone of the preceding claims, **characterised in that**
- 30 said animal related device comprises milking equipment having a teat-cup (12a) provided with a shell and a liner forming an intermediate space;

said space being connectable to a source of vacuum (24) via a pulsator (26) for creating a pulsating vacuum,

said pulsator being associated with said control means (23), and
said control means being adapted to register the cumulative running

value of said pulsator.

6. An apparatus according to claim 5, **characterised in that**
said running value is running time of said pulsator (26).

7. An apparatus according to claim 5 or 6, **characterised in that**
said running value is a number of pulsations generated by said pulsator (26).

8. An apparatus according to anyone of the preceding claims, **characterised in that**
said animal related device comprises a teat location device (14) and
said running value being running time thereof.

9. An apparatus according to anyone of the preceding claims, **characterised in that**
said animal related device comprises a teat cleaning device (12b) and
said running value being running time thereof.

10. An apparatus according to anyone of the preceding claims, **characterised in that**
said apparatus further comprises a gate means (18) for restricting
movement of an animal from an animal space (4);

said gate means (18) being opened and closed by means of a driving
means (19); and

said running value being said running time of said driving means.

1 534 Rec'd PCT/PTO 19 JUN 2000

An animal related apparatus

TECHNICAL BACKGROUND

5 The present invention relates to an animal related apparatus, comprising a robot for performing an animal related operation, said robot being associated with a control means, and at least one animal related device associated with said control means, said robot being provided with a robot arm adapted to move said animal related device towards an animal.

10

Such an apparatus is known from WO 97/15900, which document describes a milking robot for performing i.a. automatic attachment of teatcups onto the teats of an animal. However, the therein described apparatus needs regular maintenance.

15 OBJECT OF THE INVENTION

It is an object of the invention to provide an improved apparatus, which needs less maintenance.

20 SUMMARY OF THE INVENTION

This object has been achieved by the apparatus of the initially defined kind, which is characterised in that a registering means is provided for registering a cumulative running value, said control means being adapted to generate a signal when a prede-

25 terminated threshold value has been reached.

In particular, said registering means is adapted to register the running value of said at least one animal related device.

30 Alternatively, or additionally said registering means is adapted to register the running value of a driving means of said robot.

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Preferably, said running value is the running time of a complete animal related operation.

- 5 Hereby, it is established by the control means when maintenance is needed regarding the whole apparatus.

- 10 Suitably, said predetermined threshold value is set for each of said at least one animal related device, said robot and said complete animal related operation. Hereby, it is possible in advance to set a running value outgoing e.g. from wear or health requirements.

- 15 Preferably, said animal related device comprises milking equipment having a teat-cup provided with a shell and a liner forming an intermediate space, said space being connectible to a source of vacuum via a pulsator for creating a pulsating vacuum, said pulsator being associated with said control means, said control means being adapted to register the cumulative running value of said pulsator.

- 20 In particular, said running value is running time of said pulsator. Alternatively, or additionally, said running value is a number of pulsations generated by said pulsator. Hereby, it is possible to establish when the liner needs to be exchanged.

- 25 Suitably, said animal related device comprises a teat location device, said running value being running time thereof. Hereby, it is possible to establish when the teat location device needs adjustment.

- 30 Preferably, said animal related device comprises a teat cleaning device, said running value being running time thereof. Hereby, it is possible to establish when the teat cleaning device needs thorough cleaning.

Suitably, said apparatus further comprises a gate means for restricting movement of an animal from an animal space, said gate means being opened and closed by means of a driving means, said running value being said running time of said driving means. Hereby, it is possible to establish when the gate means needs to be serviced.

5

DRAWING SUMMARY

In the following, the invention will be described in more detail with reference to the accompanying drawings, in which

10

Figure 1 is a top view of the apparatus according to the invention,

Figure 2 is a schematic view of components of the apparatus shown in figure 1

15

Figure 3 is a schematic view of further components of the apparatus.

DETAILED DESCRIPTION

20

Figure 1 shows an apparatus 1 for performing an animal related operation comprising an animal space 4. A robot 6 is provided with a robot arm 8, which is movable into the animal space 4. The robot arm is, in turn, provided with a gripper 10 for gripping an animal related apparatus, in the figure shown as a teacup 12a, and an image capturing device 14 for controlling the movement of the robot arm. Alternatively, a laser sensor or an ultrasonic sensor is provided for this purpose.

25

An sensor 15, e.g. an image capturing device, a laser sensor or an ultrasonic sensor is provided for indicating the presence of an animal in the animal space 4. The sensor is associated with the robot 6.

Furthermore, the animal space 4 is delimited i.a. by means of a gate means 16, comprising a pair of gate members 18, each being provided with a driving means 19 in the form of a pneumatic or hydraulic cylinder.

- 5 The robot 6 is provided with a control means 23 (see figure 2), which i.a. controls the movement of the robot arm 8, selects the kind of animal related apparatus to be utilised and opens and closes the gates 18. Furthermore, a registering means 20a in the form of a timer is provided for registering the length of a complete animal related operation, such as teat cleaning with subsequent milking.

10

Figure 2 shows schematically the apparatus of figure 1 in more detail. The robot arm 8 grips the teatcup 12a by means of the gripper 10. The robot arm 8 with image capturing device 14 is moved towards a teat 21a of the udder 21b of an animal to be milked by means of a driving means in the form of pneumatic or hydraulic cylinders 15 22 associated with said control means 23.

20

The teatcup 12a is of the generally known kind, comprising a shell and a liner forming an intermediate space, which is connected to a source of vacuum via a pulsator 26. The interior of the liner is connected (not shown) to a milking vacuum created by the vacuum source 24.

25

Each cylinder 22 is provided with a registering means 20b in the form of a timer, which registers the running time of the cylinders 22. Furthermore, the image capturing device 14 and the vacuum source 24 are provided with such registering means 20c, 20d, that register the running time thereof, respectively.

30

The pulsator 26 is also provided with a registering means 20e, however either in the form of a timer, which measures the running time of the pulsator, or a pulsation counter, which counts the number of pulsations generated by the pulsator 26.

There may be provided one pulsator 26 for all the teatcups 12a (only one shown in the figure, but there is of course one teatcup provided for each teat to be milked) or one pulsator for each teatcup 12a. In the latter case, there is provided one registering means 20e per pulsator 26

5

Figure 3 shows schematically the same robot arm as in figure 2, however with another animal related device in the gripper, namely a teat cleaning device 12b, which is provided with a driving means, which performs a counter rotating movement of a pair of circular cylindrical brushes. The driving means is associated with a registering means 20f in the form of a timer, which measures the running time of the driving means.

10

Furthermore, the driving means 19 of the gate members 18 are connected to a registering means 20g, which measures the running time of the cylinders 19.

15

OPERATION

An animal related operation is started when an animal has entered the animal space 4, which is sensed by the animal presence sensor 15, and is an indication for the start of an animal related operation.

20

The driving means 22 of the robot arm 8 are started and the teat cleaning device 12b is moved towards the teats 21a of the animal, which teats are located by starting the image capturing device 14. The driving means of the teat cleaning device 12b is started and the teat is introduced between the rotating brushes.

25

The cleaning operation is repeated for all the teats of the udder 21b.

After performed cleaning, the driving means of the teat cleaning device 12b is stopped. The running time thereof is registered in the registering means 20f.

30

The robot arm 8 returns the teat cleaning device 12b to a rack (not shown) and fetches a teatcup 12a and moves it towards a selected teat 21a, which is located by means of the image capturing device 14.

5

While attaching the teatcup 12a onto the teat 21a, the interior of the liner is subjected to a milking vacuum, which causes the teatcup to stay attached on the teat. Furthermore, the pulsator 26 is started and the intermediate space is subjected to a pulsating vacuum.

10

The sequence is repeated until all the teatcups 12a are attached to the rest of the teats, the number depending on the kind of milked animal. The robot arm 8 is returned to a rest position and its driving means 22 is turned off. The running time of the cylinders 22 and the image capturing device 14 is registered.

15

After finished milking, the pulsator 26 is shut off and the running time and/or the number of pulsations are registered by the timer 20e. A teat retracting means (not shown) e.g. in the form of a pneumatic motor provided with a rope connected to a teatcup, detaches the teatcup and returns it to a storage position. Of course, also the teatcup retracting means may be provided with a registering means.

20

The gates 18 are now opened, by starting the cylinders 19, for allowing the animal to leave the animal space 4. The gates are closed and the cylinders are turned off. The running time thereof is registered.

25

The closing of the gates 19 is also an end signal for the whole animal related operation. The timer 20a thus registers the time lapsed between the initial sensed presence of the animal by the sensor 15 and the closing of the gates 19.

30

Each time an animal related operation is performed, each registering means 20a, 20b etc. is started and the registered value is added to the already registered from previ-

ously performed animal related operations, if any. Accordingly, a memory is provided for accumulating such values.

5 The control means 23 is preferably set with a maximum running time of each component 19, 22 etc. or a maximum number of pulsations of the pulsator 26, before the control means generates a signal that service has to be performed regarding that component or the whole apparatus. As an example, the control means generates a signal when a teatcup liner must be exchanged, outgoing from a maximum running time of the pulsator or a maximum number of pulsations thereof., the maximum
10 time constituting a threshold value.

It should be noted that the vacuum source 24 may be allowed to run continuously or to be stopped after each finished milking. In each case, the running time thereof is registered.
15

It should also be noted that the present invention also relates to robot arms with a plurality of teatcups arranged thereon.

Furthermore, a gate means may be provided also as entrance gate into the animal
20 space. Of course, also the driving means of such gates are provided with a registering means.

Also other kinds of teat cleaning devices may be used, such as a teat rinsing cup, in which case the running time of the introduced rinsing fluid is registered.
25

The invention relates to all kinds of milking animals, such as cows, sheep, goats, horses and buffaloes.

Claims

1. An animal related apparatus, comprising a robot (6) for performing an animal related operation, said robot being associated with a control means (23), and at least one animal related device (12a, 12b) associated with said control means, said robot being provided with a robot arm (8) adapted to move said animal related device towards an animal, **characterised in that**

a registering means (20a, 20b, ... , 20g) is provided for registering a cumulative running value;

said control means being adapted to generate a signal when a predetermined threshold value has been reached; and wherein

said predetermined threshold value is set for each of said at least one animal related device, said robot and a complete animal related operation.

2. An apparatus according to claim 1, **characterised in that**

said registering means (20a, 20b, ... , 20g) is adapted to register the running value of said at least one animal related device.

3. An apparatus according to claim 1 or 2, **characterised in that**

said registering means (20a, 20b, ... , 20g) is adapted to register the running value of a driving means (22) of said robot (6).

4. An apparatus according to anyone of claims 1 to 3, **characterised in that**

said running value is the running time of said complete animal related operation.

5. An apparatus according to anyone of the preceding claims, **characterised in that**

said animal related device comprises milking equipment having a teat-cup (12a) provided with a shell and a liner forming an intermediate space;

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said space being connectable to a source of vacuum (24) via a pulsator
(26) for creating a pulsating vacuum,
said pulsator being associated with said control means (23), and
said control means being adapted to register the cumulative running
5 value of said pulsator.

6. An apparatus according to claim 5, **characterised in that**
said running value is running time of said pulsator (26).

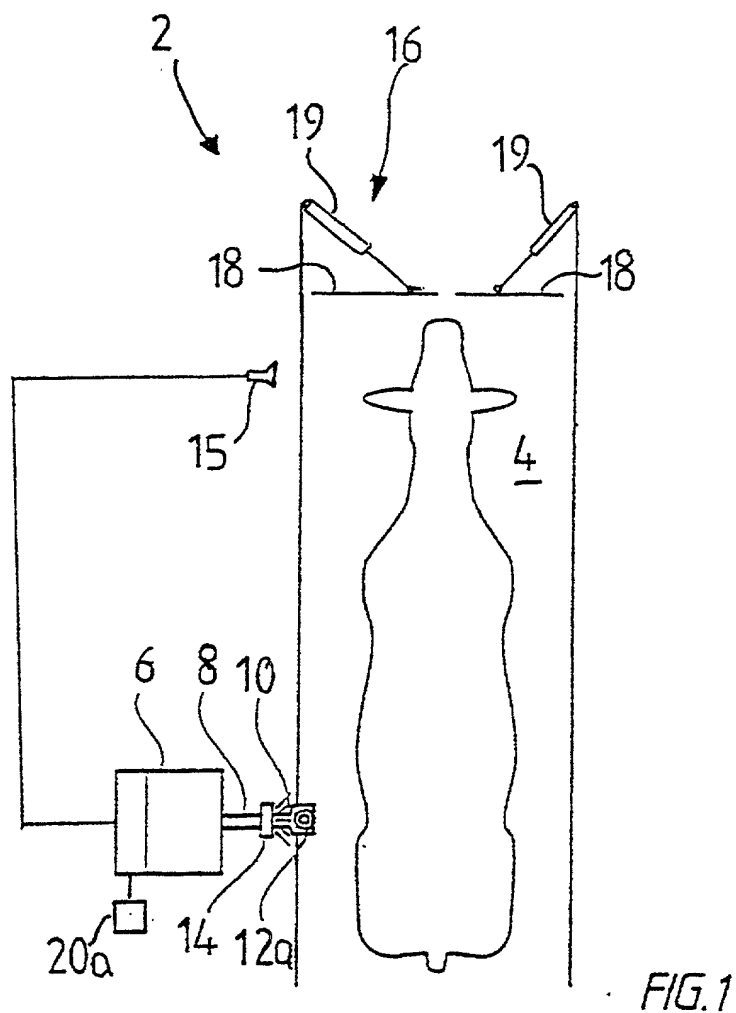
10 7. An apparatus according to claim 5 or 6, **characterised in that**
said running value is a number of pulsations generated by said pulsator
(26).

15 8. An apparatus according to anyone of the preceding claims, **characterised in**
that
said animal related device comprises a teat location device (14) and
said running value being running time thereof.

20 9. An apparatus according to anyone of the preceding claims, **characterised in**
that
said animal related device comprises a teat cleaning device (12b) and
said running value being running time thereof.

25 10. An apparatus according to anyone of the preceding claims, **characterised in**
that
said apparatus further comprises a gate means (18) for restricting
movement of an animal from an animal space (4);
said gate means (18) being opened and closed by means of a driving
means (19); and
30 said running value being said running time of said driving means.

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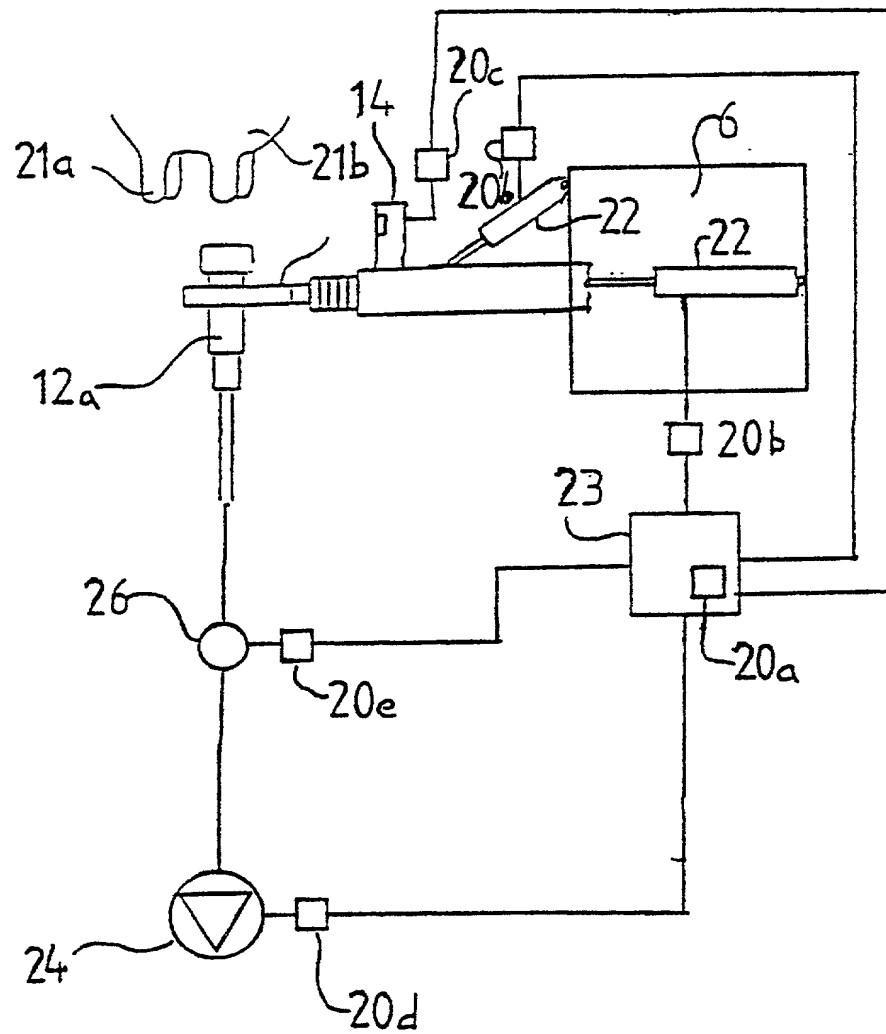


FIG. 2

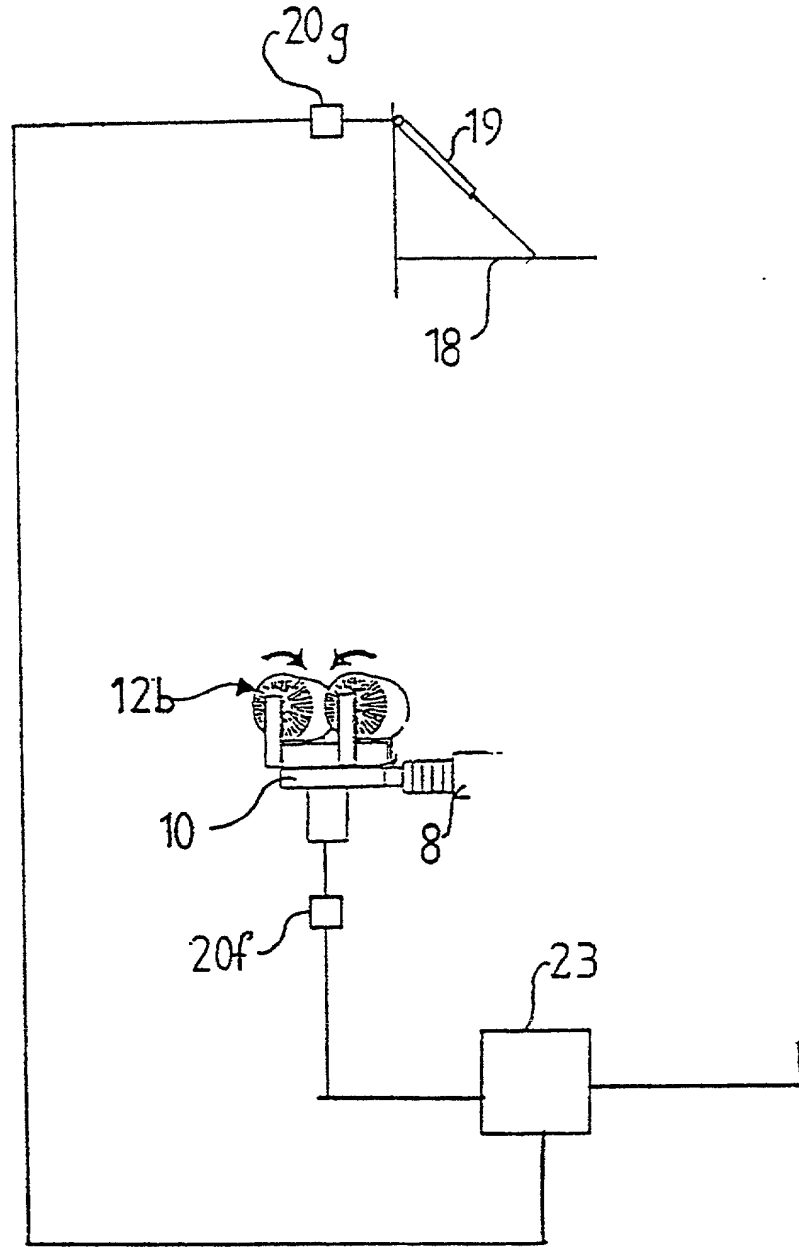


FIG. 3

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Ref. 49549-60259

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

ANIMAL RELATED APPARATUS

the specification of which: *(check one)*

REGULAR OR DESIGN APPLICATION

- ☐ is attached hereto.
- ☐ was filed on _____ as application Serial No. _____
and was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

- ☒ was described and claimed in International application No. PCT/SE98/02386 filed on 18 December 1998 and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

PRIORITY CLAIM

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

Country	Application Number	Date of Filing (day, month, year)	Priority Claimed
Sweden	9704780-7	19 December 1997	yes

(Complete this part only if this is a continuing application.)

I hereby claim the benefit under 35 USC 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status—patented, pending, abandoned)

POWER OF ATTORNEY

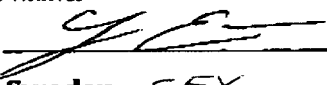
The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from Albihns Patentbyrå Stockholm AB as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Robert J. PATCH, Reg. No. 17,355, Andrew J. PATCH, Reg. No. 32,925, Robert F. HARGEST, Reg. No. 25,590, Benoit CASTEL, Reg. No. 35,041, Eric JENSEN, Reg. No. 37,855, Thomas W. PERKINS, Reg. No. 33,027, and Roland E. LONG, Jr., Reg. No. 41,949, c/o YOUNG & THOMPSON, Second Floor, 745 South 23rd Street, Arlington, Virginia 22202.

Address all telephone calls to Young & Thompson at 703/521-2297.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: Jan ERIKSSON
(given name, family name)

Inventor's signature 

Date June 9 2000

Residence: Uttran, Sweden SEX

Citizenship: Swedish

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